

GOLF CAR BUMPER

CROSS REFERENCE TO RELATED APPLICATION(S)

The present invention claims priority to United States Provisional Application Number 60/423,842, filed November 5, 2002, which is hereby incorporated by reference.

BACKGROUND OF THE INVENTION

Field of the Invention

[0001] The present invention relates generally to bumpers for a vehicle and, more particularly, to a bumper for a golf car.

Description of Related Art

[0002] A typical golf car can have a conventional vehicle bumper attached to the front and/or rear portion of a golf car. However, these conventional vehicle bumpers do not protrude outwardly enough or have sufficient strength to withstand a collision against an external vehicle or object to prevent damage to the golf car.

[0003] Typically, golf cars are very susceptible to damage by external forces such as from colliding into other golf cars, trees, or people. Often times, these golf cars exhibit visible damage to the body from a collision within a year of continuous use. It would be desirable to have a robust frame-mounted bumper assembly mounted to the front axle of the golf car which would protrude far enough to prevent damage to the body of the golf car resulting from a collision, thereby reducing the cost of repair. Therefore, it is an object of the present invention to overcome the above-mentioned deficiencies by reducing the damage and/or cost of repair to the body of a golf car resulting from a collision.

SUMMARY OF THE INVENTION

[0004] The present invention provides a bumper assembly for a golf car that can be attached to a front axle of a golf car to protect the golf car from damage during a collision. Also provided is a method for affixing the bumper assembly on to the front axle of the golf car. Further, the present invention provides a bumper assembly kit comprised of the separate components of the bumper assembly. The bumper assembly includes a bumper beam having a front surface and back surface, a first end and a second end, a hole adjacent the first end and a hole adjacent the second end. The bumper assembly also includes a pair of bumper guards, each having a hole defined therein and depending ends that are bent to define a bumper beam

recess which receives the front surface of the bumper beam. A pair of bumper brackets is provided, each bracket having a body, a first end, a second end, a first lip at the first end depending from the body and a hole defined therein, a second lip at the second end depending from the body and a hole defined therein, and a third lip depending from the body. The bumper assembly further includes at least two fasteners and a pair of metal mounting plates positioned between the second end of the bumper brackets and the front axle of the golf car to secure the brackets to the front axle of the golf car. The bumper brackets are affixed to the back surface of the bumper beam by aligning the hole of the first lip of the first bracket with the hole adjacent the first end of the bumper beam, and aligning the hole of the first lip of the second bracket with the hole adjacent the second end of the bumper beam. Each of the aligned holes receives one of the fasteners to secure the bumper beam to the bumper brackets. The bumper guards are affixed to the front surface of the bumper beam by aligning the hole of the first bumper guard with the hole adjacent the first end of the bumper beam, and aligning the hole of the second bumper guard with the hole adjacent the second end of the bumper beam. Each of the aligned holes receives one of the fasteners to further secure the bumper beam to the bumper brackets. Each of the mounting plates has a first end and a second end, with each of the ends having a hole defined therein. The hole of the first end of the first mounting plate is aligned with the hole of the second end of the first bracket, and the hole of the second end of the first mounting plate is aligned to a first hole defined in the front axle of the golf car, and a hole of the first end of the second mounting plate is aligned with the hole of the second end of the second bracket, and a hole of the second end of the second mounting plate is aligned to a second hole defined in the front axle of the golf car. Each of the aligned holes receives one of the fasteners to secure the mounting plates to the brackets and to secure the mounting plates to the front axle of the golf car.

BRIEF DESCRIPTION OF THE DRAWINGS

- [0005] Fig. 1 is a plan view of a disassembled bumper assembly made in accordance with the present invention;
- [0006] Fig. 2 is a top plan view of a bumper beam of the bumper assembly shown in Fig. 1;
- [0007] Fig. 3 is a side elevational view of a vertical bumper bracket of the bumper assembly shown in Fig. 1;
- [0008] Fig. 4 is a top plan view of a bumper guard of the bumper assembly shown in Fig. 1;

- [0009] Fig. 5A is a top plan view of a mounting plate taken along line VA-VA in Fig. 1; Fig. 5B is a top plan view of a mounting plate taken along line VB-VB in Fig. 1;
- [0010] Fig. 6 is a top perspective view of a front portion of a typical golf car;
- [0011] Fig. 7 is a top perspective view of a bumper assembly attached to a front axle of a golf car made in accordance with the present invention; and
- [0012] Fig. 8 is a top perspective view of the bumper assembly attached to the front axle of a golf car shown in Fig. 7.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0013] The present invention provides a bumper assembly for a golf car. The present invention also provides a bumper assembly kit comprised of the separate components of the bumper assembly. Further, a method is provided for attaching the bumper assembly on a golf car.

[0014] Figs. 1-5B show a bumper assembly 10 disassembled into its separate components, which includes a bumper beam 12, a pair of brackets 20, 20', a pair of bumper guards 30, 30' a pair of mounting plates 36, 36', and at least two fasteners 34. Referring to Figs. 1-2 and 6, the bumper beam 12, having a front surface 13 and a back surface 15 and a first end 14 and a second end 16, includes a rectangular hollow cross section and stands in a longitudinal direction, substantially to the full width of the golf car 44. A pair of holes 18, 18' is defined adjacent the first end 14 and the second end 16 of the bumper beam 12, respectively. The holes 18, 18' are adapted to receive one of the fasteners 34 for securing the bumper beam 12 to the bumper brackets 20, 20'. The bumper beam 12 can be made of metal such as a 16-gauge steel tube or a rigid polymeric material. The front surface 13 of the bumper beam 12 also can be covered with an elastomeric material, such as polyurethane, rubber, or foam material.

[0015] Referring to Figs. 1, 3, 7-8, the bumper brackets 20, 20', having a body 21, 21', a first end 22, 22', a second end 24, 24', a first lip 26, 26' positioned at the first end 22, 22' and depending from the body 21, 21', a second lip 28, 28' positioned at the second end 24, 24' and depending from the body 21, 21', and a third lip 33, 33' depending from the body 21, 21', are used to attach the bumper beam 12 to the front axle 42 of the golf car 44. The first lip 26 of the bumper bracket 20 is bent as shown in phantom 23 and has a hole 27 defined therein. The second lip 28 is bent as shown in phantom 25 and also has a hole 29 defined therein. The first bumper bracket 20 is affixed to the back surface 15 of the bumper beam 12 by aligning the hole 27 of the first lip 26 with the hole 18 adjacent the first end 14 of the bumper beam

12, and aligning the hole 27' of the first lip 26 of the second bumper bracket 20' with the hole 18' adjacent the second end 16 of the bumper beam 12. A fastener 34 is passed through each of the aligned holes 27 and 18, and 27' and 18', i.e., each of the aligned holes 27 and 18, and 27' and 18' receives a fastener 34 therein to secure the bumper beam 12 to the bumper brackets 20, 20'.

[0016] Referring to Figs. 1, 4, 7-8, the pair of bumper guards 30, 30' having depending ends that are bent as shown in phantom 17, 17' to define a bumper beam recess 31, receive the front surface 13 of the bumper beam 12 in the bumper beam recess 31, as shown in Figs. 7-8. Figs 1 and 4 also show the ends 17, 17' in the unbent state. The bumper guards 30, 30' are affixed to the front surface of the bumper beam 12 by aligning a square hole 32 of the first bumper guard 30 with the hole 18 adjacent the first end 14 of the bumper beam 12, and aligning the square hole 32' of the second bumper guard 30' with the hole 18' adjacent the second end 16 of the bumper beam 12. Respective fasteners 34 are passed through each of the aligned holes 32, 27 and 18, and 32', 27' and 18', i.e., each of the aligned holes 32, 27 and 18, and 32', 27' and 18' receives the fastener 34 therein, to further secure the bumper beam 12 to the bumper brackets 20, 20'. Preferably, these fasteners 34 have a square cross-section shank portion that mates with the square holes 32, 32'.

[0017] Referring to Figs. 1 and 5-8, the brackets 20, 20' include a pair of bottom mounting plates 36, 36', respectively, to secure the second end 24, 24' of the brackets 20, 20', respectively, to the front axle 42 of the golf car 44. The mounting plates 36, 36' are welded to the brackets 20, 20'. Each mounting plate 36, 36' has a first end 46, 46' and a second end 47, 47', said first end 46, 46' having a hole defined therein 38, 38' and said second end 47, 47' having a hole 39, 39' defined therein. The hole 38 of the first end 46 of the first mounting plate 36 is aligned with the hole 29 defined in the second end 24 of the first bumper bracket 20, and the hole 38' of the first end 46' of the second mounting plate 36' is aligned with the hole 29' defined in the second end 24' of the second bumper bracket 20'. A fastener 34 is passed through each of the aligned holes 38 and 29, and 38' and 29', respectively, i.e., each of the aligned holes 38 and 29, and 38' and 29' receives a fastener 34 therein to secure the bumper brackets 20, 20' to the mounting plates 36, 36'. The holes 39, 39' of the second ends 47, 47' of the mounting plates 36, 36' are aligned with holes 43, 43' defined in the front axle 42 of the golf car 44 to affix the mounting plates 36, 36' to the front axle 42 of the golf car 44.

[0018] The bumper assembly 10 can also include an impact absorbing member 41 attached to the bumper beam 12, the bumper brackets 20, 20', and/or the bumper guards 30, 30', to absorb the impact during a collision. The absorbing member can be made of an elastomeric

material, such as foam, rubber, or the like. The body 21, 21' defines a bumper receiving recess R, R' defined by lips L, L' and the bent second lips 28 and 28' and mounting plates 36 and 36'.

[0019] The present invention can be sold as a kit 11, as shown in Fig. 1. Alternatively, the bumper assembly 10 can be sold as a unit for attachment to the front axle 42 of a golf car 44. Finally, a golf car 44 can be manufactured with a bumper assembly 10 attached thereto. Preferably, eight fasteners 34 are provided with the kit 11, where one fastener 34 passes through holes 18, 32 and 29, and one fastener 34 passes through holes 18', 32' and 29'. Further, three fasteners 34 pass through holes 27, 36 and 39 into the front axle 42, respectively, and three fasteners 34 pass through holes 27', 36' and 39' in the front axle 42, respectively.

[0020] Referring to Figs. 1, 6-8, in operation, the bumper assembly 10 can be mounted to a front axle 42 of a golf car 44 for protecting the golf car 44 from damage resulting from a collision. If the bumper assembly 10 becomes damaged, the bumper assembly 10 can be simply unfastened from the front axle 42 of the golf car 44 and repaired. Replacing the bumper assembly 10 is less expensive than replacing or repairing damage to the body of the golf car 44. Also, the golf car 44 does not have to be taken out of service for an extended period of time in order to replace and/or repair the bumper assembly 10.

[0021] Fig. 6 illustrates a front portion of a typical golf car 44 without a bumper. Referring to Figs. 6-8, a bumper assembly 10 is provided for attachment to the front axle 42 of the golf car 44 to protect the body of the golf car 44 from damage during a collision. The bumper assembly 10 can be mounted to the front axle 42 of the golf car 44, and extends in a longitudinal direction along the width of the frame of the golf car 44. The bumper assembly 10, which protrudes outwardly away from the front portion of the golf car 44 and thus provides a gap between the front axle 42 of the golf car 44 and the bumper assembly 10, can protect the golf car's 44 front body panel covers, right and left spindles, tie rods, adjusting tubes, steering column, and front axle 42 during a collision. The rear bumper, rear fenders, and bag compartment are less likely to become damaged during a collision.

[0022] The present invention has been described with reference to specific details of particular embodiments thereof. It is not intended that such details be regarded as limitations upon the scope of the invention except insofar as and to the extent that they are included in the accompanying claims.